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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/593,268	10/06/2006	Makoto Yoshida	SH-0067PCT/US	6453
21254 7590 12/02/2009 MCGINN INTELLECTUAL PROPERTY LAW GROUP, PLLC 8321 OLD COURTHOUSE ROAD SUITE 200 VIENNA, VA 22182-3817				
EXAMINER				
HOFFMANN, JOHN M				
ART UNIT		PAPER NUMBER		
1791				
MAIL DATE		DELIVERY MODE		
12/02/2009		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/593,268

Applicant(s)

YOSHIDA ET AL.

Examiner

John Hoffmann

Art Unit

1791

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 August 2009.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 2 is/are pending in the application.
4a) Of the above claim(s) 2 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 18 September 2009 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/GS-08)
Paper No(s)/Mail Date 5/14/2009 9/18/2006
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of Group I in the reply filed on 8/18/2009 is acknowledged.

Claim 2 is withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 8/18/2009.

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "heating furnace body" must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Claim 1 and drawing 1 refer to the heater 5 which, along with insulating member 6 comprise the "furnace". However the claim also requires that heater is a "heating furnace body" - but the drawing only shows it being in the furnace and/or the insulating member. The specification gives no indication as to what this "heating furnace body" is.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure

is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "rod-like" is indefinite as to how it is 'like' a rod. It is noted that 'like' means it encompasses things that are not rods. It is unclear what non-rod things are encompassed by the claim.

There is confusing antecedent basis for "the porous glass base material" at lines 4, 6 and 9. Lines 1-2 refer to two different porous glass base materials – one is preceded by "rod-like" the other is not.

Line 6 refers to "after every part...is moved through..." however there is no requirement that every part is moved through a region. Thus it is unclear whether lines 6-9 implies that the every part does move through the region

Lines 8-9: there is no antecedent basis for "the heater to be vitrified". Examiner understands that it doesn't make sense for a heater to be vitrified, but any other interpretation is also unreasonable.

Examiner also notes that the term "vitrified" as presently used is indefinite as to its meaning, thus making it impossible to understand the metes and bounds of the present claims. The term "vitrify" has a long-standing (500 year old) meaning - to make vitreous. And a more recent (a few decades) definition seeming caused by a plethora of poor foreign translation is: to sinter. These two different definitions are generally not a problem because one of ordinary skill can tell which is being referred to. However with the present application there is a problem because claim 1 and the specification (e.g. [0014]) indicate that both sintering and vitrifying occur. However applicant's starting material is already vitreous (see [0002]), thus the present specification is not using the 500-year meaning. And since sintering is already referred to, then applicant must be using some third definition for "vitrified" - but there is no discussion of what this new definition already is. Examiner refers to: *Karlin Tech. Inc. v. Surgical Dynamics, Inc.*, 177 F.3d 968, 971-72, 50 USPQ2d 1465 (Fed. Cir. 1999) (recognizing "the common

sense notion that different words or phrases used in separate claims are presumed to indicate that the claims have different meanings and scope.”). By the same logic, the different words (sintered and vitrified) in the same claim indicate different meaning and scope. Since it cannot mean sintering and it cannot mean being made vitreous, applicant must intend for it to mean something else (besides the 500 year old definition and the 20-30 year old definition). But there is no indication what this something else is. Thus one could not reasonably determine what the claim covers.

Claim Rejections - 35 USC § 103

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kamio US 2002/0056292 in view of Sarkar 4599098, Walczak 2003/0221459, Glodis 6105396 and Shimotakahara 2003/0084686.

Figure 1 of Kamio clearly shows sintering material 12 by lowering the base material into a heating furnace (24+26). It moves through a region from the upper edge of insulating member 24 to an upper edge of heater 26.

Kamio does not indicate the 4.5 hour limitation or that the region is a 'preheated' region. [0061] of Kamio discloses that the temperature of the heater is controlled to be 1600 C, but it not stated when it begins. It would have been obvious to have the furnace begin prior to moving it down so as to save the time of heating the glass.

Given that the heating to temperature occurs prior, during or after the start of the movement (i.e. only three options) the generic teaching of heating reasonably covers all three timing possibilities. Or in terms of the Supreme Court decision in KSR, given only three possibilities, it would have been obvious to try each of them.

Still further, it would have been obvious to repeat the Kamio process to make as many preforms as possible. And thus it would have been obvious to keep the furnace at temperature, so as to reduce energy consumption associated with cooling to room temperature between repeats, and to save time.

Examiner notes there are other common sense reasons as to why to preheat a furnace – there is nothing in the specification that indicates that preheating a region was considered to be inventive.

Thus given the furnace is preheated, by radiation convection and/or conduction, the region above the heater would inherently and necessarily be preheated.

It is Walczak discloses it is known to preheat in the preform consolidation art: [0078] and [0082].

As to the 4.5 hour limitation. Sarkar teaches the downfeed rate is a critical parameter and that and the larger the preform, the lower the necessary feed rate: col. 9, lines 26-32. Sarkar discloses a feed rate of 2 mm/min, which is not all that much larger than applicants 1.48 mm/min. disclosed at table 1.

Walczak at [0073] discloses a preferred sintering time of 4-6 hours, but that varies depends on the size, density, composition and temperature.

And Shimotakahara discloses at [0027] a sintering time of 6-12 hours.

Glodis is cited to show that economy of scale is an important consideration in the fiber preform art: col. 3, lines 25-35. That is: the larger the preform, the lower the cost per meter of fiber.

Thus it would have been obvious to make the preform as large as possible in the Kamio process to make the fiber more cheaply, and to perform routine experimentation on the speed of movement and duration. Examiner notes that speed and duration and size are clearly interrelated. If you double the length of a preform and keep the speed the same, it will take twice as long to pass through the furnace, but by doubling the speed one can keep the duration constant. The speed and duration are both disclosed as being result-effective variables.

Art Unit: 1791

2144.05 [R-1] Obviousness of Ranges

See MPEP § 2131.03 for case law pertaining to rejections based on the anticipation of ranges under 35 U.S.C. 102 and 35 U.S.C. 102/103.

II. OPTIMIZATION OF RANGES**A. Optimization Within Prior Art Conditions or Through Routine Experimentation**

Generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) (Claimed process which was performed at a temperature between 40°C and 80°C and an acid concentration between 25% and 70% was held to be prima facie obvious over a reference process which differed from the claims only in that the reference process was performed at a temperature of 100°C and an acid concentration of 10%.); >see also Peterson, 315 F.3d at 1330, 65 USPQ2d at 1382 ("The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages."); < ** In re Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969) (Claimed elastomeric polyurethanes which fell within the broad scope of the references were held to be unpatentable thereover because, among other reasons, there was no evidence of the criticality of the claimed ranges of molecular weight or molar proportions.). For more recent cases applying this principle, see Merck & Co. Inc. v. Biocrraft Laboratories Inc., 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989); In re Kulling, 897 F.2d 1147, 14 USPQ2d 1056 (Fed. Cir. 1990); and In re Geisler, 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997).

B. Only Result-Effective Variables Can Be Optimized
A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977) (The claimed wastewater treatment device had a tank volume to contractor area of 0.12 gal./sq. ft. The prior art did not recognize that treatment capacity is a function of the tank volume to contractor ratio, and therefore the parameter optimized was not recognized in the art to be a result-effective variable.). See also In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) (prior art suggested proportional balancing to achieve desired results in the formation of an alloy).

Based on the above, neither the time (greater than 4.5 hours) nor the disclosed speed appear to be inventive. Although Applicants may have discovered a new and unexpected result for whatever furnace construction, preform size, preform density, temperature, etc. were used. The claims are not limited to the experimental conditions

used to achieve the data. Rather the claims are directed to all/any preform and furnaces of any size, temperature, composition, density, etc.

It is well established that the evidence relied on to establish unobviousness must be commensurate in scope with the claimed subject matter. See *In re Kerkhoven*, 626 F.2d. 846, 851, 205 USPQ 1069, 1072-1073 (CCPA 1980) and *IN re Clemens*, 622 F.2d 1029, 1035, 206 USPQ 289, 296 (CCPA 1980).

Given the above teachings in the secondary references, it would have prima facie obvious to employ optimum or workable conditions, including those claimed, in the process of Kamio. *In re Boesch*, 617 F.2d 272,276 (CCPA 1980) ("[D]iscovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art."); *In re Aller*, 220 F.2d 454, 456 (CCPA 1955) ("[I]t is not inventive to discover the optimum or workable ranges by routine experimentation."). The Appellants have not shown that the claimed conditions are "critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range." *In re Woodruff* 919 F.2d 1575, 1578 (Fed. Cir. 1990). Accordingly, based on the totality of record, Examiner finds that the preponderance of evidence weighs most heavily in favor of obviousness within the meaning of 35 U.S.C. § 103(a).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Nicholson is cited as being cumulative to Kamio. Nicholson is cited as being of general interest. Johnson is cited as evidence that it is known to soak preforms at high temperatures prior to sintering. And Lane is cited as being cumulative to the secondary reference: it teaches sintering for 5 hours.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Hoffmann whose telephone number is (571) 272 1191. The examiner can normally be reached on Monday through Friday, 7:00- 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steve Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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